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ABSTRACT

The relationship between creativity and perception was examined in two studies that correlated a combined total of 11 tests of perception (e.g., figure-ground and physiognomy) and creativity (e.g., remote associates and figure preferences). Four of the tests dealt with perception, five with creativity, and two with both. Since several of the tests had two or three scores, there was a total of 21 scores. Three tests were administered under controlled time conditions in a group setting. The tests were administered to two groups of undergraduates (five men and eight women, and three men and 11 women, respectively). Across both studies, a modest number of tests were significantly correlated, including a correlation of 0.61 between all perception and creativity scores combined. Results suggest that creativity might be increased if it were preceded by a perceptual kind of "warm-up." A set to respond visually could act as a "rehearsal" to increase examinees' attention, sensitivity, and awareness--qualities needed to solve problems creatively. Since the subject pools for these two studies were small, these conclusions should be taken cautiously. The testing methodology used and two data tables are appended. (TJH)

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Abstract

The Relationship Between Tests of Creativity and Perception

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The relationship between creativity and perception was examined in two studies that correlated a combined total of 11 tests of perception (e.g., figure - ground and physiognomy) and creativity (e.g., remote associates and figure preferences). The tests were administered to two groups of undergraduate subjects (N = 13 and 14). Across both studies, a modest number of tests were significantly correlated, including a correlation of .61 between all perception and creativity scores combined (in Study II). The implications of these findings, as well as future directions for research, were discussed.

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The Relationship Between Tests of Creativity and Perception

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Rightly to perceive a thing, in all the fullness of its qualities, is really to create it

C. E. Montague

The perceptions of creative people may differ from non-creatives. "To be creative ... one must literally 'see' the world differently than others do" (Bergum, & Bergum, 1979, p. 61). These differences could take several forms: Creative individuals may take different perspectives, do so quickly, and realize their implications more fully than non - creative's (Wertheimer, 1945); they might also be more flexible, open, and sensitive to perceptual experience (Schachtell, 1959; Tumin, 1954); and they could look beyond the obvious when faced with the familiar, or conversely, see the familiar in the unusual.

These possible ties between creativity and perception, although intuitively appealing, have been neither consistenty nor strongly demonstrated. Attempts to find a correlation between creativity and the number of figure - ground changes (Lindauer, 1973; Lindauer & Baust, 1974), a possible indication of perceptual flexibility, are mixed. Some studies find a tie (Bergum & Bergum, 1979a, b), others do not (Bergum & Falum, 1975; Simpson, Lansky, Lester, & Paterson, 1983). Similarly uneven is the evidence linking creativity with field - independence (Goodenough, 1976; Jackson, Messick, & Myers, 1964; Spotts & Mackler, 1967; Witkin, Lewis, Hertzman, Machover, Meissner, &Wapner, 1954), an ability to extract useful information from a confusing matrix of input (Morris & Bergum, 1978; Bilotta, Guare, & Lindauer, 1981; Bloomberg, 1971), as revealed, for example, by performance on the hidden figures test (HFT; Jackson, et al.,1964).

The problem may lie with the two perceptual tasks that have been used, neither of which may touch on processes most pertinent to creativity. The reliance on one or two measures of perception contrasts with research in creativity. In recognition of creativity's multidimensionality (Guilford, 1975), many measures are used: self-reports, biographical inventories, adjective checklists, college major, and tests, such as figure preference (Welsh, 1959;

Welsh & Barron, 1949) and divergent thinking (e.g., listing the unusual uses of ordinary objects (Guilford, 1975).

A similar sensitivity to the complexity of perception requires that measures besides field - independence and figure - ground be tested. A multidimensional approach to perception might better reveal which aspects of visual experience are related to the different aspects of creativity. Consequently, two correlational studies were conducted, in which multiple measures of both perception and creativity were used, and in this way, disclose which tests were most pertinent.

METHOD

Two correlational studies (I and II) were conducted, with some overlap between the tests and measures used in each. Study II partially replicated, as well as extended and clarified some of the findings of Study I.

The Materials: General

Eleven different tests were administered in the two Studies: four dealt with perception, five with creativity, and two straddled both. (Details about each are found in Appendix A.) Since several of the tests had two or three scores, there were a total of 21 scores; these included a combined z- score for each of the two sets of perception and creativity measures.

Three tests (Figure - Ground, Hidden Figures, and Remote Associates) were given under controlled time conditions in a group setting. The other tests were self-administered; they were taken either in the subjects' class or at the their convenience. The tests were distributed, one at a time, and over a period of several weeks, and after the subjects had completed the previous test. The perception and creativity tests alternated.

The subjects were students in two of the Experimenter's classes. They were told about the tests but did not know the (correlational) purpose of the study. They were asked to complete the tests as "honestly as possible." The tests were anonymously identified, and were collated by the last four digits of the students' social security or telephone numbers.

The Subjects

Subjects in Study I (N = 13; 5 men and 8 women) were upperclass students taking a creativity course. Subjects in Study II N = 14; 3 men, 11 women) were freshmen taking an introductory psychology course (and hence were younger than those who participated in Study I). Those who had taken a perception course were excused. Data from a few subjects in both studies could not be

used because they either incorrectly completed or did not return the tests. In four instances, where one or two tests from a subject were missing, the group mean was substituted. The tests were given at the beginning of the term before the students were familiar with either the concepts or materials of perception and creativity.

Analyses

Liberal confidence limits were used, given the small Ns, i.e., one-tailed tests. (In Study I, a significiant $r = .47$, $df = 11$, $p < .05$; and in Study II, $r = .45$, $df = 12$, $p < .05$). For similar reasons, trends were noted (restricted to $r \Rightarrow .40$, $p < .10$ $p > .05$).

RESULTS: STUDY I

The intercorrelations between each of the perception and creativity tests, and the two measures combined, are shown in Table 1 (APPENDIX B). The combined perception and creativity scores, disappointingly, were not correlated with one another ($r = .22$, $p > .05$). However, the combined perception score was correlated with the total RAT score of creativity ($r = .49$, $p < .05$). The overall perception score also tended to be correlated with the Holland - Baird originality measure and (contrary to the predicted direction) the Torrance's T-II test ($r = .41$ and -43, $p < .10$, respectively).

Between the individual perception and creativity tests, 11 of the 29 possible correlations (38%) were either significantly correlated (= 9) or tended to be (= 2, i.e., $r \Rightarrow .40$, $p < .10$). The ability to identify fragmented figures was correlated with the greatest number of creativity tests, correlating with the combined creativity test score ($r = .55$, $p < .05$), and with three creativity tests: Remote Associates (Total tried), originality, and Torrance's T-II ($r = .53$ - $.67$, $p < .05$). Another perception test, the total number of figure-ground stimuli identified, was correlated with two creativity tests, the RAT (Total) and Torrance's T-I ($r = .53$ - $.54$, $p < .05$).

Within the perception tests, there was a fair amount of consistency. Each of the three perception tests correlated with the combined perception score ($r = .74$ - $.87$, $p < .05$). Further, the two figure ground measures (total and pairs recognized) correlated with one another ($r = .78$, $p < .05$); and the fragmented figures test tended to correlate with the two figure - ground measures ($r = .41$ - $.43$, $p < .10$).

The creativity tests were also characterized by a high degree of intertest reliability. The Figure Preference Test was positively correlated with

Torrance's T-I (r = .48, p < .05) and negatively correlated with the RAT (the number correct, RAT - C; r = - 48, p < .05). Both RAT scores (RAT-C and the total tried, RAT-T) were correlated with Torrance's T-II (r = .52 -.57, p < .05), and with each other (r = .79, p <.05); the RAT-C also tended to be correlated with the Holland - Baird originality measure (r = .40, p < .10). The two Torrance tests (I and II), however, were not related to each other (r = -.09, p > .05). Finally, the overall creativity score was correlated with both RAT measures, as well as with the Originality and Torrance T-II measures (r = .59 - .84, p < .05). Similar trends were found between the overall creativity score and the Torrance T-I (r = .41, p < .10) and the Figure Preference tests (r = .34, p> .05).

A link between creativity and perception was therefore modestly supported: 32% of all possible correlations between perception and creativity were either statistically significant (p < .05 in 6 comparisons) or tended to be significant (i.e., r => .40, p < .10 in 3). Disappointingly, though, the overall creativity and perception measures were unrelated; and not all of the relationships were positive. Nevertheless, the results of Study I encouraged a further effort in Study II, but with several new (and improved) tests.

STUDY II

Some of the tests used in Study I were used again in Study II (the Figure Preference Test and the RAT), and as explained below, one test (Figure - Ground) was modified; other tests were dropped; and several new ones were added.

New among the perception measures were the Hidden Figures Test (HFT) and the Physiognomic Cue Test (PCT, composed of A, B, and Total scores; **[21]**). The Figure - Ground Test was retained, but in modified form. An additional attempt was tried because of the mixed results of Study I: The total number of stimuli identified (FG-T) was not a factor, although the number of pairs identified (FG -P) was. Further, the subjects' full range of responses may have been inhibited in Study I by the 30 sec time limit that was imposed. Consequently, in Study II, subjects were given as much time as they wanted.

The fragmented - figures test was not included, since Study I had demonstrated its robustness. It correlated with several individual creativity measures and the overall creativity score. By excluding this test, it was possible to add other tests without taxing the subjects' time and patience. Sensitivity to subjects' available time also led to the exclusion of other tests (the Holland - Baird Originality and the two Torrance tests, T-I and T-II), even though replication would have been preferred. The Figure Preference Test was

retained, even though it was not correlated with any perception measure. It is one of the few visual measures of creativity. Also retained was the RAT, one of the most successful measures in Study I, in order to check a paradoxical finding: The total number of items tried (RAT-T) was correlated with the overall perception measure, but the number correct (RAT-C) was not. Study II re-examined this discrepancy. Two additional tests were added because they pertain to both perception and creativity: The Aesthetic Perception Test and the Hemispheric Localization Test. The inclusion of the new tests in this Study, it was hoped, might reveal additional relationships.

RESULTS: STUDY II

The correlational data are presented in Table 2 (APPENDIX C). The combined creativity and perception measures, unlike Study I, were now correlated (r = .61, $p < .05$). The number of statistically significant (10) and near significant (i.e., r => .40, $p < .10$ = 3) correlations also increased. Thus,13 of 23 possible comparisons between perception and creativity (57%) were correlated (compared to 38% in Study I).

The physiognomy test stood out among the perception tests. The Total and A scores were correlated with the overall creativity measure (r = .55 and = .45, respectively, $p < .05$), while the B score tended to be (r = .41, $p < .10$). The three physiognomy scores, furthermore, were correlated with both RAT scores (r = .54 and .77, respectively, $p < .05$).

Figure - ground perception, as in Study I, was again uncorrelated with the overall creativity measure (r = .30, $p > .05$). It was, as in Study I though, correlated with the RAT (Total tried; r = .45, $p < .05$). The HFT was not correlated with the overall creativity measure (r = .18, $p > .05$), although it did correlate with hemispheric localization (r = .47, $p < .05$), and tended to be correlated with the RAT (total; r= 42, $p < .10$). Thus, mirroring earlier research (e.g.,Bergum & Bergun, 1979a; Bergum & Falum, 1975), figure - ground and HFT correlates with creativity were weak, at best, and at most, inconsistent.

Among the perception measures, the three physiognomy scores correlated with one another (r = .56 - .92, $p < .05$). There also tended to be correlations between the A factor of physiognomy and the HFT, and between the HFT and Figure - ground (r = .42 - .44, $p < .10$). Each of the individual perception tests was correlated with the combined perception score (r = .48 - . 83, $p < .05$), except for figure - ground, although it tended to be (r= .41. $p < .10$). And among

the creativity tests, both RAT scores were correlated with the overall perception measure (r = .75 - 85, p < .05), thereby resolving the discrepancy in Study I (where only the total number tried [RAT-T] was correlated). Both measures of this associative test, as noted above, were tied to several perception tests: each was correlated with the physiog- nomic test scores; and the number correct (RAT-C) was correlated with figure - ground, while the total number tried (RAT-T) was correlated with the HFT. Both RAT scores, furthermore, were correlated with each other (r = .86, p < .05). The Figure - Preference Test was not correlated with the overall perception measure (r = .22, > .05), which was also true in Study I; but unlike Study I, it was not correlated with any other test. All the individual creativity tests were correlated with the combined creativity measure (r = .52 - .88, p < .05), with the exception of the Figure Preference Test (r = .22, p > .05).

The Aesthetic Perception Test, one of two tests that refers to both creativity and perception, was correlated with the overall creativity measure (r = .52, p < .05), but not with the overall perception measure (r = .01, p > .05). Aesthetic perception may therefore be more related to creativity than to perception. This test was also correlated with the other dual purpose test, hemispherical localization (r = .50, p < .05). The two dual- - purpose measures may therefore reflect similar brain functions. However, the other relationships with hemispheractity were inconsistent: It was correlated with only one perceptual measure, the HFT (r = .47, p < .05); but it was not correlated with either the overall perception or creativity measures (r = .07, p < .05, in both instances).

In summary: In two correlational studies, more than half of nearly 60 measures of perception and creativity were related one another. Two of the four perception tests were prominent: Physiognomic perception and the identification of fragmented figures. Three of the six creativity tests stood out: The Remote Associates Test, the Holland - Baird originality measure, and the true - false self-descriptive Torrance test (T-I). Thus, of the 11 tests used, six (55%) demonstrated a link betwen perception and creativity.

DISCUSSION

The two studies, taken together, revealed a modest relationship between creativity and perception. This relatively postive outcome contrasts with previous research (e.g., Bergum & Falum, 1975; Goodenough, 1976), and was most likely the result of including several perception tests (rather than one),

and as a consequence, making it meaningful to combine the various perception and creativity scores into an overall measure (the z-scores). Had a narrower approach been taken, dependant on only one or two tests, the previous pattern of mixed, low, or no relationships would have been duplicated (depending on which particular test was chosen).

The most impressive of the creativity measures was the Remote Associates Test (RAT). Both the number correct and the total number tried (RAT-C and RAT-T, respectively; the latter includes acceptable answers not on the key), achieved the highest correlations with perception (r = > 75); and these were replicated in both studies. But its relevance to perception is difficult to explain, since it is a verbal rather than a visual measure. Perhaps the perceptual tests relied on the same sort of associatve ability as the RAT. For example, the fragmented figures test may depend on the perceiver's ability to search through and retrieve appropriate memories.

The results for the figure - ground and field- independence measures, as in previous studies, were disappointing (e.g., Bergum & Falum, 1975; Bilotta, et al., 1981). Time considerations could have been a factor The restricted time in which the figure - ground test had to be completed in Study 1 (30 sec), and the 10 min in which to discover a hidden figure, may have been a source of stress. This adversely affected performance on the creativity tests. Time pressures could also have worked against two of creativity's primary qualities, spontaneity and playfulness. On the other hand, the unlimited response time available for identifying the figure - ground stimuli in Study II led to a "ceiling" effect. Any potential difference between creative and non - creative subjects was masked, since so many figures were recognized (M = 25.80, maximum = 29.)

Three perceptual measures therefore accounted for most of the correlations with creativity: the number of fragmented stimuli identified, aesthetic perception, and physiognomic perception. A consideration of their characteristics may suggest why perception and creativity are related.

The ability to discover wholes in incomplete figures (the fragmented figures measure) points to the role of closure in creativity. Creative people are able to integrate and synthesize fragmentary, incomplete, and disorderly information. A related feeling for order probably accounts for the kinship between aesthetic perception and creativity. Aesthetic sensitivity is helpful in judging the goodness or rightness of a work, including such qualities as elegance, simplicity, and order. An aesthetic sense is not exclusive to artists or

applicable to art only, but also exists in non - artists who are creative (Lindauer, 1981). The prominence of physiognomic perception supports the notion of creative individuals "going beyond the given," that is, in being inventive, imaginative, and playful.

The results suggest that creativity might be increased if it were preceded by a perceptual kind of "warm - up." A set to respond visually could act as a "rehearsal," which serves to increase a person's attention, sensivitity, and awareness, qualities needed to solve a problem creativity. For example, the effectiveness claimed for brain - storming (Osborn, 1953) may be the result of adapting an active perceptual set. Problem solvers, during the "green" (uncriticial) stage, are encouraged to examine a problem in a full, open, and non - judgmental way. The influence of perception on creativity could be experimentally tested. Subjects might be exposed to one of the three tests of perception that were correlated with creativity. Prior experience with a perception task, like physiognomy, compared to working with figure - ground (or no task), would establish an effective mental set.

The two studies, although consistent, must nevertheless be cautiously interpreted. The Ns were small, the testing conditions were diverse, and the statistical criteria were liberal. But at least three effective tests of perception (the identification of fragmented stimuli, aesthetic perception, and physiognomic perception) were identified. However, they now need to be tested with a larger sample, along with aditional measures of creativity (e.g., unusual uses).

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APPENDIX A

The perception tests

The following perception tests (and their abbreviations) were used:

1. Figure - ground (FG): A set of 13 ambiguous figures were taken from various sources (Lindauer, 1973; Lindauer & Baust, 1974); e.g., Boring's wife/mother-in-law, a pirate/rabbit, a dove/hawk); the Rubin face - vase was used as a sample training stimulus. Each ambiguous stimulus had at least two possible meaningful figures embedded within it. The total number of figures seen (noted as FG-T) was recorded (maximum = 29), along with the total number of stimuli in which at least two of the figures were recognized (labelled FG-P; maximum = 13). The stimuli, on individual pages, were shuffled and placed in a booklet. In Study I, exposure to each figure-ground stimulus was limited to 30 sec; subjects circled and labelled what they saw. In Study II, the task was self-paced, and identifying labels were available (e.g., "Do you see an old woman? If so, circle it."). A recog- nition measure was used, rather than rate of reversals, since the former lends itself to group testing. Thus, the task measured whether there was reversal or not. Reversible stimuli, e.g., the Necker cube, which have no easily identifiable meaningful shapes, were not used.

2. Fragmented figures (FRAG): Subjects were presented with a booklet of14 randomly arranged fragmented or incomplete forms (e.g., a typewriter, bus, airplane (Street, 1931). Subjects wrote down what they saw, if anything, on the booklet page. This test was used in Study I only.

3. Hidden figures test (HFT): Subjects received a booklet containing 16 sets of simple and complex geometric forms (Educational Testing Service, 1962). Subjects had 10 min in which to find the embedded simple forms within a complex matrix. Success was indicating by outlining the simple figure. A high score (i.e., finding many figures) indicates field independence. This test was used in Study I only.

4. Physiognomic perception (PHYSIOG): Subjects in Study II were given a self-administered booklet containing 32 nonsense forms (Stein, 1975). Each could be seen either imaginatively (a physiognomic response) or literally, e.g., jagged lines was rated as either angry or as jagged lines, respectively. Three physiognomic scores were obtained: Factor A, in which feelings are attributed to 14 of the forms (e.g., anger), Factor B, in which thing - like qualities are

assigned to 12 forms (e.g., rain), and a Total score, which sums Factor A and B, along with six miscellaneous items.

The creativity tests

The following creativity tests were used:

1. The Figure - Preference Test (FPT): In both Study I and II, subjects received a booklet containing 22 geometrical figures taken from a larger test Welsh, 1959; Welsh & Barron, 1949). Creative people prefer the more complex and assymetrical forms.

2. The Remote Associates Test (RAT): In both Study I and II, subjects were given a booklet containing 40 sets of three words (e.g., cookies, sixteen, heart; Mednick, 1962; Mednick & Mednick, 1967). The task is to find a fourth word common to the three (e.g, sweet). In Study I, the task was completed at home within a 40 min time limit; in Study II, group tested subjects had an 11 min time limit. Two measures were obtained: the correct number of linking words according to the key (noted as RAT-C); and the total number of correct and incorrect (according to the published key) words used (labelled as RAT-T). The latter measure was included because a case could be made, in most instances, for the correctness of the "incorrect" word (according to the key)

3. A test of originality (ORIG): The Holland - Baird test (Holland & Baird, 1968/1976) of originality was given in Study I only. It is composed of 38 true-false items considered to be relevant to creativity (e.g., "I would rather be a senator than a philosopher").

4. Torrance I and II (T-1 and T-2, respectively): Two self-descriptive tests were taken from Torrance (Torrance, 1971; Torrance & Khatena, 1970) and used in Study I only. One test (T-I) is composed of 30 true-false self-descriptions (e.g., "I think financial reward is the best incentive to good work"). The other test (T-II) contains 24 forced-choice items (taken from a longer 50-item test) in which subjects choose one of two self-descriptions, e.g., " Likes to work alone [or] Prefers to work in a group." Like the Holland - Baird test of originality above, the two Torrance tests list the interests, attitudes, motives, values, and goals that characterize creative people.

Perception and creativity tests combined

Two tests were administered that pertain to both perception and creativity.

1. Meier Aesthetic Perception (ART): The Meier Aesthetic Perception test Meier, 1967), given in Study II only, has subjects rank their preferences for 13

sets of forms, each containing four examples. Both perception (aesthetic) and (artistic) creativity are tapped by this test.

2. Hemisphere dominance measure (HEM): Subjects were given a test of brain dominance or hemispheracity (Katz, 1983; Muse, 1985). The test contains about 40 self-report verbal and visual items. A low score represents right hemisphere dominance, the presumed locus of both creativity and perception.

3. and 4. All the perception and creativity scores (with the exception of the aesthetic perception and hemispheracity measures, which already encompass both dimension) were combined into two overall z-scores. (To avoid negative numbers, 4 was added to all scores.) (Several other measures, while also overlapping to varying degrees (e.g. RAT-C and RAT-T, and PHYSIOG A, B, and Total), did touch on somewhat different aspects of the phenomenon tested.)

Appendix B

Table 1

Correlations Between Perception and Creativity Tests:

Study I

	Perception			Creativity						Combined	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)FRAG -		43	41	19	35	53	67	-31	54	74	55
(2)FG-T		-	78	-37	36	46	13	-49	-06	86	01
(3)FG-P			-	-12	04	21	20	-27	-16	87	-02
(4)FPT				-	-48	-14	27	48	02	-12	34
(5)RAT-C					-	79	40	-13	57	31	59
(6)RAT-T						-	38	-35	52	49	62
(7)ORIG							-	34	59	41	84
(8)T-I								-	-07	-43	41
(9)T-II									-	14	77
(10)All Perception										-	22
(11)All Creativity											-

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Mean	3.00	18.95	5.40	8.05	25.07	32.00	24.96	14.35	9.17

Key to Table 1:

(1) - (3) = Perception tests
- (1)= Fragmented figures (FRAG)
- (2)-(3)=Figure - ground (FG)
  - (2)=Total figures seen (FG -T)
  - (3)=Pairs seen (FG-P)

(4) - (9)= Creativity tests
- (4) Figure - preference test (Barron - Welsh - Barron (1949) modified) (FPT)
- (5)-(6)=Remote Associates Test (RAT)
  - (5)=Number correct (RAT - C)
  - (6)=Number tried (RAT- T)
- (7)=Holland - Baird ORIG)
- (8)-(9)=Torrance (T)
  - (8)=I (T-I)
  - (9)=II (T-II)

(10)-(11)=Combined scores
- (10)=Three perception scores
- (11)=Six creativity scores

Appendix C

Table 2

Correlations Between Perception and Creativity Tests:

Study II

	Perception					Creativity			Perception & Creativity		Combined	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)FG	-	44	10	-02	06	45	30	-02	10	02	30	41
(2)HFT		-	42	15	34	22	42	-14	27	47	18	66
(3)PHYSIOG-A			-	56	92	58	70	06	-10	-16	50	85
(4)PHYSIOG-B				-	82	54	61	-04	-09	-32	41	71
(5)PHYSIOG-T					-	67	77	08	-05	-24	60	85
(6)RAT-C						-	86	-01	25	-07	88	75
(7)RAT-T							-	-14	14	02	77	85
(8)FPT								-	-05	-28	22	-20
(9)ART									-	50	52	01
(10)HEM										-	08	-04
(11)All creativity											-	61
(12)All perception												-

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Mean	25.8	12.8	29.2	46.3	93.2	17.0	20.2	5.4	15.7	96.5

Key to Table 2:

(1) - (5) = Perception tests
- (1)=Figure - ground (FG)
- (2)=Hidden Figures Test (HFT)
- (3) - (5)=Physiognomy tests (PHYSIOG)
  - (3)=A factor (feelings) (PHYSIOG-A)
  - (4)=B factor (thing-like) (PHYSIOG-B
  - (5)=Total (A+B+miscellaneous) (PHYSIOG-T)

(6) - (8)= Creativity tests
- (6)-(7)=Remote Associates Test (RAT)
  - (6)=Number correct (RAT- C)
  - (7)=Number tried (RAT - T)
- (8)=Figure - preference test (Welsh - Barron (1949) modified) (FPT)

(9) - (10)= Perception and creativity tests
- (9)=Meier aesthetic perception test (ART)
- (10)=Hemispheric dominance test (HEMIS)

(11)-(12)=Combined scores
- (11)=Five perception scores
- (12)=Three creativity scores

Note

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